and the fact that claim 8 characterizes an element in one way or another does not change the overall structure. Therefore, it is respectfully submitted that claim 8 is not obvious in view of the '971 reference.

Claim 7 was rejected under 35 USC 103 as unpatentable over the '005 reference. Applicants respectfully traverse. In connection with claim 3, the above remarks demonstrate that the structure described by the '005 reference is significantly different from the structure defined by claim 3 and that, therefore, claim 3 is neither anticipated nor rendered obvious by the reference. It is respectfully submitted that the limitation introduced in claim 7 (which depends on claim 3) does not rectify the structural deficiency of the reference relative to base claim 3, and that fact that claim 7 characterizes an element in one way or another does not change the overall structure. Therefore, it is respectfully submitted that claim 7 is not obvious in view of the '005 reference.

In light of the above amendments and remarks, it is respectfully submitted that all of the Examiner's rejections and objections have been overcome. Reconsideration and allowance are respectfully solicited.

Respectfully,
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Appendix A – Marked-up version showing changes

IN THE SPECIFICATION:

Page 5, replace the paragraph beginning at line 19 with:–

Increased data rate is achieved by, effectively, splitting the incoming data rate into multiple channels, and each channel is transmitted over its own terminal. Viewed another way, information symbols from a transmitting terminal is split into L parallel streams. Stream l is encoded using a channel code with rate R_l and then coded with a space-time block encoder with N transmitting antennas. Advantageously, the coding rates are chosen such that $[R_1 < R_2, < \mathrm{L}, < R_L]$ $\underline{R_1 < R_2, < \cdots, < R_L}$.--;

Page 14, replace the paragraph beginning at line 8 with:--

FIG. 2 presents an arrangement for increasing the data rate or throughput in wireless systems. In FIG. 2, the information to be transmitted is demultiplexed in element 40 into two streams. One stream is applied to channel encoder 41, and the other stream is applied to channel encoder 51. The output of channel encoder 41 is applied to space-time block encoder 42, and then to mapper and pulse shaper 43 and antennas 44 and 45. Similarly, the output of channel encoder 51 is applied to space-time block encoder 52, and then to mapper and pulse shaper 53 and antennas 54 and 45. Generalizing, information symbols from a transmitting terminal are split into L parallel streams. Stream l is then encoded using a channel code with rate R_l and then coded with a space-time block encoder with N transmitting antennas. The coding rates can be the same, but an advantage accrues when the coding rates are chosen such that $[R_1 < R_2, < \mathrm{L}, < R_L]$ $\underline{R_1 < R_2, < \cdots, < R_L}$. In such a case, symbols transmitted in stream l will have better immunity against channel errors as compared to symbols transmitted in stream u where $u>l$. The base station receiver is assumed to be equipped with at least L receive antennas. The base station receiver treats each stream as a different user and uses the iterative interference cancellation techniques disclosed above, or the ones disclosed in the aforementioned '163 application. Since the first stream has the smallest coding rate R_l, it has the best immunity against the channel errors and most likely it will be error free. The receiver then uses the decoded symbol of stream l to subtract the contributions of the first stream in the total received signals, while decoding the remaining L-l streams. In decoding the remaining L-l streams, the decoder decodes signals from the second stream

first, since it has the best immunity against channel errors among the remaining L-l streams (due to its lowest rate, R_2 from among the remaining streams). Then the receiver uses the decoded symbols for the second stream to cancel out its contribution in the received signal. This process is repeated until all streams are decoded.--.

IN THE CLAIMS:

3. A transmitter comprising:

a demultiplexer responsive to an applied input signal for developing a plurality of at least two signal streams, and

a like plurality of channel coding/space-time coding transmitters, each responsive to a different signal stream of said plurality of signal streams, and each carrying out channel coding followed by space-time coding.

4. The transmitter of claim **3** where each of said channel coding/space-time coding transmitters comprises:

a channel coder of rate R_i,

a space-time encoder responsive to output signal of said channel code encoder,

a modulator responsive to said space time-encoder,

pulse shaping circuitry responsive to said modulator, and

at least two antennas for transmitting a space-time coded signal created by said space-time encoder, modulated by said modulator, and conditioned by said pulse shaping circuitry.

5. The transmitter of claim **4** where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i $i=1,2,...,L$, that are not identical to each other.

6. The transmitter of claim **4** where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i $i=1,2,...,L$, that are such that $R_1 > R_2 > \cdots > R_L$.

7. The transmitter of claim **3** where said channel code encoder performs trellis encoding.

8. The transmitter of claim 3 where said channel code encoder performs convolutional encoding.

15. A transmitter comprising:

a demultiplexer responsive to an applied input signal for developing an L plurality of at least two signal streams, and

a like plurality of channel coding encoders, each responsive to a different one of said plurality of signal streams,

a like plurality of a space-time coding transmitters, each responsive to a different one of said channel coding encoders.

16. The transmitter of claim **15** where each of said space-time coding transmitters comprises:

a space-time encoder responsive to input signal of said space-time coding transmitter,

a modulator responsive to said space time-encoder,

pulse shaping circuitry responsive to said modulator, and

at least two antennas for transmitting a space-time coded signal created by said space-time encoder, modulated by said modulator, and conditioned by said pulse shaping circuitry.

17. The transmitter of claim **15** where each channel coder $i=1,2,...,L$ in said L plurality of channel coders develops codes at rate R_i, and the rates for different values of index i are not identical to each other.

18. The transmitter of claim **17** where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i $i=1,2,...,L$, that are such that $R_1 > R_2 > \cdots > R_L$.

19. (Amended) The transmitter of claim 17 where said demultiplexer develops an L plurality of signal streams, where said channel coders in said L channel coding/space-time coding transmitters develop rates R_i i=1,2,...,L, that are such that [$R_1 < R_2 < \mathrm{L} < R_L$] $\underline{R_1 < R_2 < \cdots < R_L}$.

20. The transmitter of claim **15** where said channel code encoder performs trellis encoding or convolutional encoding.